Inclusion of Cool Roofs in Residential Title 24 Prescriptive Requirements

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Cool Roof Benefits

- Roofs stay cool in sun if they have
  - high thermal emittance and high solar reflectance

    OR
  - low thermal emittance and exceptionally high solar reflectance
- Cool roofs can reduce
  - building cooling electricity use
  - peak power demand
  - ambient air temperature

Environmental Impact

- Benefits
  - increased human comfort
  - slowed smog formation
  - mitigation of urban heat islands in summer
  - decreased waste from disposal of roofs
- Penalties
  - possible higher wintertime heating energy use
  - degraded wintertime urban air quality
  - possible use of water and detergents to clean roofs

Scope

- Cool roofs for residential buildings
  - New study
  - Steep-sloped and Low-sloped roofs

Methodology

- Review measure availability and cost
  - technologies, market share
  - manufacturers, distribution
  - availability, cost
  - useful life
- Perform building cost/benefit analysis
  - evaluate measured energy savings
  - use MicroPas (with new, improved, and free attic model) to simulate cooling and heating energy use
  - net savings = cooling savings - heating penalties
- Project state-wide savings